REMARKS

Claims 1-14, 16, 17, 19 and 20-24 are pending, claims 15, 18 and 21 having been cancelled, new claims 22-24 having been added by this Amendment. Reconsideration in view of the following remarks is kindly requested.

Claim Rejections – 35 U.S.C. §102

Claims 1, 2, 6-8, 10, 11, 13 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Miya (US 2002/0137548). This rejection is respectfully, traversed, and is inapplicable to new claims 22-24 as set forth below.

Initially, claim 15 has been canceled; therefore, the rejection as to claim 15 is now moot. Applicants kindly submit that Miya fails to teach or suggest a method of detecting a random access channel preamble in a received uplink signal from a user comprising, at least: the temporal processing step of "determining for each subcorrelation output signal <u>a decision statistic as the magnitude squared of the subcorrelation output signal</u>" and "<u>comparing a maximum of the determined decision statistics to a threshold value</u>, the random access channel preamble of the uplink signal having been detected if the maximum decision statistic meets or exceeds the threshold value", as recited in amended claim 1. (underlining for emphasis)

Miya does not disclose determining a decision statistic as <u>a magnitude squared of the subcorrelation output signal</u>, or comparing <u>a maximum of the determined decision statistic to a threshold value</u>, these amendments are supported by Equations 8 and 12 in Applicants' specification. In particularly, Miya utilizes detection circuits 1081 to calculate a correlation between preamble sections and already known RACH preamble codes by using a matched filter. (Miya, para. [0039] On the basis of the result of the correlation calculation, delay profiles are prepared by a delay profile circuit.

For preamble detection, a level detection circuit 1081C detects <u>a level of a correlation peak from the delay profiles</u> and based on the <u>result of this level detection</u>, it is judged whether or not the RACH preamble has been received. This is completely different than what is recited in amended claim 1 of the present application.

Further, none of the references of record teach or suggest these features. Bhatoohaul describes in column 4, lines 55-67 that it uses fast transform techniques to form a decision

statistic to identify the preamble signature sequence. However, it does not calculate the decision statistic as a maximum squared of a subcorrelation output signal, as recited in claim 1, nor does it compare a maximum of all the determined decision statistics to a threshold value, as shown in Equation 12 of the present application and recited in amended claim 1. Accordingly, Applicants kindly submit that claim 1, and claims 6-8 depended thereon are allowable for at least this reason.

With regard to claim 10, Applicants have amended this claim to further recite parameters required to determine the spatially processed signal. In particular, Miya fails to teach or suggest that the spatially process signal is determined as a function of each of (1) an amplitude of the uplink signal transmitted from the user, (2) a user specific preamble signature sequence, (3) the total number of antennas at the base station receiver, and (4) a channel coefficient of a specified path for a given receive antenna of the receiver, the channel coefficient representing a beam formed by the given receive antenna in a given direction", as recited in amended claim 10.

As can be seen in Equation 4 (the determination of the spatially processed signal by direct implementation), or Equation 7, (determination of the spatially processed signal by FFT implementation), each of the amplitude A_k, d_k (t) – the user-specific preamble signature sequence of the user k, N – the total number of antennas at the base station receiver, and h_{kml} – which is the channel coefficient of a given path for a receiver antenna m, is utilized to spatially process the uplink signal.

Miya groups a plurality of channels or users by using an uplink signal as an existing weight (Miya, in para. [0023], and a common group weight is used for the same group). Miya does not disclose that the spatially processed signal is determined as a function of each of the amplitude of the uplink signal, the user-specific preamble signature sequence, and/or the channel coefficient of a specified path for a given receive antenna of the receiver. At best, Miya may consider the total number of antennas at the base station receiver, although is not explicitly described anywhere in the Miya disclosure.

None of the cited prior art teach or suggest each of these factors for determining the spatially processed signal. Branlund et al. ("Branlund") describes calculating a different set of weights for each of the preambles detected (Branlund, para. [0079] and uses the weight to calculate some type of weighting and delay equalization of a received data vector, as described in paras. [0180] – [0181]. This has nothing to do with determining a spatially processed signal as a

function of <u>a channel coefficient representing a beam formed by the given receive antenna in a given direction</u>, and is not described as such anywhere in the passages relied on by the Examiner in Branlund. In this respect, the Examiner is kindly reminded that the combination of references must teach <u>each and every feature recited in the claimed invention</u>, and that the claims must be read in light of what is described in the specification. Accordingly, the weights relied on by the Examiner in paras. [0178], [0180] do not represent a beam formed by the given receive antenna in a given direction, but rather represent a minimum least squares linear beam forming weight for the set of <u>"known" preamble symbols transmitted</u>, as explicitly recited in para. [0178] of Branlund. Further, the weights – "dispreading weights" are calculated <u>after</u> a correct preamble has been identified by preamble detection block 16 in FIG. 1 of Branlund. (see para. [0177]) These weights therefore cannot represent a beam formed by a given receive antenna in a given direction, as recited in amended claim 10.

For at least the above noted reasons, Applicants submit that claims 10, 11 and 13, dependent thereon, are allowable over the art of record.

Claim Rejections – 35 U.S.C. §103

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miya (US 2002/0137548) as applied to claim 1, and in further view of Branlund et al. (US 2003/0086366). This rejection is respectfully traversed, and is inapplicable to new claims 22-24 as set forth below.

Applicants submit that Branlund fails to cure the deficiencies of Miya, at least for the reason that Branlund fails to teach the determining and comparing steps of amended claim 1. Accordingly, claim 3 is allowable at least for the reasons set forth above regarding claim 1. Withdrawal of the rejection is kindly requested.

Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miya (US 2002/0137548) as applied to clams 1 and 11, and in further view of Bhatoohaul et al. (U.S. 7,076,015), "Bhatoohaul". This rejection is respectfully traversed, and is inapplicable to new claims 22-24 as set forth below.

Applicants submit that Bhatoohaul fails to cure the deficiencies as set forth above regarding independent claim 1. Namely, Bhatoohaul fails to determine for each subcorrelation output signal, a decision statistic <u>as the magnitude squared of the subcorrelation output signal,</u>

and does not compare a maximum of the determined decision statistics to a threshold value, as recited in amended claim 1. Accordingly, claim 4 is allowable at least for the reason that it depends from claim 1.

Further, claim 12 is allowable for the reason set forth in independent claim 10, as Bhatoohaul fails to teach or suggest the specific parameters used in determining the spatially processed signal noted above in the discussion of independent claim 10. Claim 12 is thus allowable for at least this further reason. Withdrawal of the rejection is kindly requested.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miya (US 2002/0137548) in further view of Bhatoohaul et al. as applied to claim 4, and in further view of Ertel et al. (U.S. Patent No. 7,031,290), "Ertel". This rejection is respectfully traversed, and is inapplicable to new claims 22-24 as set forth below.

Applicants submit that claim 5 is allowable at least for the reason that neither Bhatoohaul nor Ertel cure the deficiencies of Miya, as set forth above regarding independent claim 1. Ertel, like Bhatoohaul, is limited in its teachings and does not teach or suggest one or both of the determining and comparing steps of independent claim 1. Accordingly, claim 5 is allowable at least for the reasons set forth above regarding independent claim 1. Withdrawal of the rejection is kindly requested.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miya (US 2002/0137548) in further view of Pederson et al. (US 2004/0218569). This rejection is respectfully traversed, and is inapplicable to new claims 22-24 as set forth below.

Applicants submit that claim 9 is allowable for at least the reasons set forth above regarding independent claim 1, as claim 9 has been amended similarly to independent claim 1. Neither Miya nor Pederson teach or suggest determining a decision statistic as the magnitude squared of the subcorrelation signal, or comparing a maximum of the determined decision statistics to a threshold value, as already discussed above. Accordingly, claim 9 is allowable at least for the reasons that neither Miya nor Pederson teach or suggest one or both of the determining and comparing steps in amended claim 9. Withdrawal of the rejection is kindly requested.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miya (US 2002/0137548) as applied to claim 10, in further view of Posch (U.S. Patent No. 5,724,270). This rejection is respectfully traversed, and is inapplicable to new claims 22-24 as set forth below.

Applicants submit that claim 14 is allowable at least for the reasons set forth above regarding independent claim 10, as neither Miya nor Posch teach or suggest each of the parameters required for determining the spatially processed signal, as recited in amended claim 10. Withdrawal of the rejection is kindly requested.

Claims 16, 17, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Branlund et al. (US 2003/0086366) in view of Miya (US 2002/0137548). This rejection is respectfully traversed, and is inapplicable to new claims 22-24 as set forth below.

Initially, claim 21 has been canceled; thus the rejection as to this claim is now moot. Independent claim 16 has been amended similarly to claim 10, and is allowable over Branlund, singularly or in combination with Miya, as neither Branlund nor Miya teach or suggest determining the spatially processed signal as a function of each of the amplitude of the uplink signal transmitted from the user, a user-specific preamble signature sequence of the user, the total number of antennas at the base station receiver, and a channel coefficient of a specified path for a given receive antenna which represents a beam formed by the given receive antenna in a given direction. Accordingly, claim 16 is allowable for previous reasons set forth above regarding claim 10. Claims 17, 19 and 20 are allowable as being dependent off of an allowable independent claim.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Branlund et al. (US 2003/0086366) in view of Miya (US 2002/0137548) as applied to claim 16, and in further view of Bhatoohaul et al. (U.S. Patent No. 7,076,015). As claim 18 has been cancelled, this rejection is now moot.

New Claims

New claims 22-24 have been added to provide further protection for Applicants' invention. Applicants submit that the features in claims 22-24 are allowable for the reasons set forth above regarding there corresponding independent claim, and/or for the further features recited therein.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-14, 16, 17, 19 and 20-24 in connection with the present application is earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) hereby petition(s) for a one (1) month extension of time for filing a reply to the outstanding Office Action and submit the required $120.00 extension fee herewith.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By   Matthew J. Lattig, Reg. No. 45,274

P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

MJL:edt